DETAILED ACTION

Election/Restrictions

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions, which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group 1, claim(s) 1-3, 5-7, 10-11, 13, 19-20, 23, 29, 31, 35, 37, and 72-75, drawn to the article.

Group 2, claim(s) 38, 40, 43-44, 47-48, 50-54, 56, 58, 65, and 69-71 drawn to the method for making the article.

2. The article which the applicants claim as the technical feature of their invention in both groups was found in the prior art as being anticipated by DeFord et. al. (US Publication No. 2002/0139082) with characteristics found obvious by Dornieden et. al. (WO 2001/068777). Therefore, the technical feature was determined to not be the applicants' contribution over the prior art leaving the article Group 1 and the method of Group 2 without a common inventive concept, which leads to lack of unity of invention.

3. During a telephone conversation with Monique Vander Molen on September 6, 2007 a provisional election was made without traverse to prosecute the invention of the article, claims 1-3, 5-7, 10-11, 13, 19-20, 23, 29, 31, 35, 37, and 72-75. Affirmation of this election must be made by applicant in replying to this Office action. Claims 38, 40,

43-44, 47-48, 50-54, 56, 58, 65, and 69-71 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Objections

4. Claims 23, 29, 31 and 72 are objected to because of the following informalities:

Consider claims 23 and 72: The applicants claim in claim 23 that the cement to silica ratio of is between 0.2 "and" around 1.5 on a dry weight basis and claim in claim 72 that the cement to silica ratio is between 0.29 "and" around 0.51. The examiner notes that the applicants are attempting to claim a ratio in both claims but that a ratio should be written with either a colon between the two values of interest or with the term "to" instead of "and" since the definition of a colon is the term "to".

Consider claims 29 and 72: The applicants claim in claim 29 a porosity of between 30% "and" around 60% and claim in claim 72 a porosity of between 25% "and" around 45%. Since the term between is used the examiner notes that the claim is a range and when claiming a range, wherein the value of the invention falls into, that the term "and" should be replaced by the term "to" to improve clarity that the two values are being considered together and not separate values which the term "and" can be interpreted as such.

Consider claim 31: The applicants claim in claim 31 a relative density of between 0.5 "and" around 2.0. Since the term between is used, the examiner notes that the claim is a range and when claiming a range, wherein the value of the invention falls into, that the term "and" should be replaced by the term "to" to improve clarity that the

two values are being considered together and not separate values which the term "and" can be interpreted as such.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 31 and 72 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention.

Claim 31 is being considered indefinite and failing to particularly point out and distinctly claim the subject matter the applicants regard as their invention due to the claimed density of between 0.5 and around 2.0 not having units. While density is defined as mass per unit volume, there are different units for mass and different units used for volume which in turn will cause density to be in various units. Therefore, it is not clear what unit of mass and volume this density pertains.

For the purposes of applying prior art, the examiner interprets the claim to contain a ratio using the units g/cm^3 since this is what the applicants disclose as their invention.

Claim 72 is being considered indefinite and failing to particularly point out and distinctly claim the subject matter the applicants regard as their invention due to the claimed cement to silica ratio of between 0.29 and around 0.51. While the values may be the ratio of cement to silica as the applicants regard as their invention, this portion of

the claim is unclear due to the fact that there is no identification on what the values entail such as amount or dry weight % (which is what the applicants state their ratios in their disclosure). Therefore, the ratio of the cement to silica in this claim may be interpreted as dry weight % but does not have to be.

For the purposes of applying prior art, the examiner interprets the claim to contain the ratio of cement to silica in a dry weight %.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-2, 5-7, 10-11, 19, 23, 29, 31, 35, 37, 72-74 are rejected under 35 U.S.C. 102(b) as being anticipated by DeFord et. al. (US Publication No. 2002/0139082)

DeFord et. al. teach a composite building material comprising a core with a thin fiber cement facing (abstract). The fiber cement facing (sealer) is reinforced with individual fibers (Pg. 2, Col. 1, Par. 0019) such as water-proofing agents, polymeric resin emulsions such as acrylic latexes, calcium carbonate (Pg. 3, Col. 1, Par. 0045) and alkali resistant glass fibers (Pg. 5, Col. 2, Par. 0090) that can be stabilized in high-alkali environments (Pg. 3, Col. 1, Par. 0045). The core and the said facings can be air-cured, elevated-temperature cured (thermally), or steamed cured (Pg. 5, Col. 2, Par. 0092). DeFord et. al. also disclose that preferred fibers for the cement facing are cellulose fibers which have great surface areas available for binding to cementitious

material due to the fibrillation process (Pg. 4, Col. 1, Par. 0053). This said fibrillation process improves fiber-matrix bonding giving the facing strength (Pg. 3., Col. 2, Par. 0051). Also, the increasing adhered bonding of the fiber-matrix facing can also contain various interlayers to improve core-skin bonding (Pg. 6, Col. 1, Par. 0095). The illustration given below provides clarity.

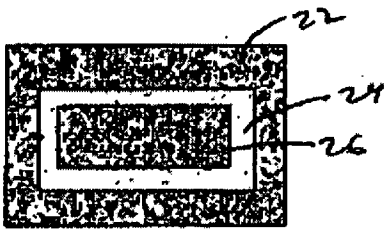

FIG 7E

The above figure shows a core (26) with a facing layer (24) and another cement/fiber facing layer (22). The reference discloses that the facing layer (24) may also be made with fiber cement (Pg. 7, Col. 1, Par. 0105). The examiner notes that the interlayers being present to enhance skin (22) to core (26) bonding along with the previously discussed fibers being used to enhance bonding to cementitious materials are equivalent to the applicants' claims 7. This is due to the fibers having increased binding to cementitious material and if the layer of (24) is also cement/fiber material then the sealer (24) will bind to it. Therefore, the fibers being in the layers are the integral adhesion promoting formulation. Also, this is equivalent to claim 10 because if both layers are made of the same material and the fibers are the adhesive formulation adapted to enhance bonding, then the layer 24 would contain the fiber adhesive formulation which would bond to the top layer (coat) 22. Furthermore, since both layers are made of the same material and both function as a sealer covering the core, the

layer 24 is covered by layer 22, which in turn is a key coat. Also, since it is illustrated above that the cement/fiber facings have adhesion formulation that adheres the facings to eachother, then the layer 22 also has adhesion fiber formulation for another topcoat if one were added for the fact that all the above facings function in the same manner and have adhesion capabilities for every layer placed on.

While the illustration provided above shows that the facings have two major surfaces and facing 22 has a surface that is exposed to the exterior of the substrate (outward orientation), the illustration below shows a different embodiment.

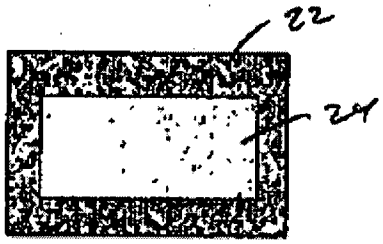

FIG. 7D

From this illustration, it is shown that facing 22 also has an inward orientated major surface on the substrate and due to DeFord et. al. teaching that the facing material can be used on building materials (Pg. 8, Col. 2, Par. 0151) such as wallboards to aid in surface abuse resistance (Pg. 9, Col. 1, Par. 0156-0157), the inward surface would be a mounting surface on the said wallboard. Due to the various surface abuse, the reference also discloses that the building material can have a thermal insulation and a fiber/cement face cladding (Pg. 7, Col. 2, Par. 0133-0134) and since the fiber/cement face has an exterior surface, then it is considered an exterior cladding panel.

The reference further discloses that the overall structure has a porosity ranging from 10 to 90% , the density of the product is in between 1.2 to 1.7g/cm^3 (Pg. 1, Col. 1, Par. 0005) and the said facing also includes a hydraulic binder of cement (Pg. 3, Col. 1, Par. 0043) in a weight percent of 25 to 40 (Pg. 3, Col. 1, Par. 0039) and a silica filler (Pg. 3, Col. 1, Par. 0044) in a weight percent of 45 to 65 (Pg. 3, Col. 1, Par. 0040). The examiner notes that the above weight percents are equivalent to the applicants' weight percent ratio due to if the cement was only 25 weight percent and the silica was only 45 weight percent, then this would give cement to silica ratio of 0.25 to 0.45. Furthermore, if the cement was increased slightly to 29 weight percent % and silica to 51 weight percent then the final ratio would be 0.29 to 0.51. DeFord et. al. also teach that the core with the fiber cement facing can actually have a first and second facing (Pg. 2, Col. 2, Par. 0033-0035) or can be applied to any of the core sides and substantially entirely around the core (Pg. 2, Col. 2, Par. 0036). This is done due to being exposed to weather conditions that cause stresses from pollutants and carbon dioxide in the atmosphere (Pg. 1, Col. 1, Par. 0007).

Due to the definition of carbonation being when carbon dioxide is dissolved in water and the teaching that a water-proofing agent can be applied to the facing, which will prohibit the absorption of water, then by adding the water-proofing agent to the facing (sealer) carbonation can not occur. Therefore, because the sealer functions in this manner of prohibiting carbonation, the cement facing and core product of this invention is equivalent to the applicants' claim 1 and the sealer reduces the propensity

of differential carbonation (if carbonation can not occur then the "propensity", also known as occurrence, can not take place) to take place on the product.

Claim Rejections - 35 USC § 103

9. Claims 3, 13, 20, and 75 are rejected under 35 U.S.C. 103(a) as being obvious over DeFord et. al. (US Publication No. 2002/0139082) in view of Dornieden.et. al. (WO 2001/068777)

DeFord et. al. teach a composite building material comprising a core with a thin fiber cement facing (abstract) as mentioned above but is **silent with regard to the cured facing and core being cured by radiation, and the facings to be cross-linked to obstruct (impeding) the carbon dioxide from traveling through the sealer to a predetermined extend**

Dornieden et. al. teach a process for producing coatings, adhesive films and/or seals from actinic-radiation-curable coating materials (abstract). Suitable substrates to be coated in the reference are plasterboard (wallboard), cement slabs and building materials (Pg. 2, Col. 2, Par. 0032). The reference discloses that the said coatings can be comprised of polymer materials (Pg. 6, Col. 2, Par. 0094) and the said coating can be crosslinked (Pg 1, Col. 1, Par. 0005) (Pg. 1, Col. 1, Par. 0006). The said coating is applied to the substrates in a thickness from 10 to 100 micron, preferably 15 to 80 micron (Pg. 3, Col. 2, Par. 0047) which is stable for weathering (Pg. 2, Col. 1, Par. 0015). The said coating contains at least one bond such as a carbon-oxygen bond

which is activated with radiation and then reacting with other bonds of its kind to form crosslinking reactions (Pg. 4, Col. 1, Par. 0061).

Dornieden et. al.'s reference is related to DeFord et. al.'s reference due to DeFord et. al.'s teaching that polymeric resins can be used in the facing (coating) for a substrate such as a wallboard for the purpose of protecting it from environmental and weathering (Pg. 7, Col. 1, Par. 0108) effects such as carbonation and pollutants and also that a calcium carbonate can be added as a fiber which is both insoluble and contains a carbon-oxygen bond.

Since Dornieden et. al. teach that a carbon-oxygen bond (calcium carbonate) can be activated with radiation curing to form crosslinking reactions (carbon dioxide) and DeFord et. al. teach that a water-proof agent is present in the coating which prohibits the carbonation in the coating further impeding (obstructing) migration, then it would have been obvious to one having ordinary skill in the art to modify DeFord et. al.'s teaching to include that the coating was radiation cured and that the carbon-oxide bond of the calcium carbonate would react to form crosslinking reactions.

Also, since the water-proof agent and the calcium carbonate are both potential fibers in the coating and the water-proof agent impedes (obstructs) migration through the sealer, then it would have been further obvious to one having ordinary skill in the art at the time the invention was made to modify DeFord et. al.'s reference to include that the sealer would impede migration of the carbon dioxide to a predetermined extend.

Furthermore, due to the radiation coating of Dornieden et. al.'s coating being of a thickness of 15 to 80 micron and the polymer and carbon-oxygen elements being in

both teachings, then it would have been even further obvious to one having ordinary skill in the art at the time the invention was made to modify the coating of DeFord et. al.'s teaching to include a thickness of 15 to 80 micron.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lauren E.T. Robinson whose telephone number is (571) 270-3474. The examiner can normally be reached on Mon. through Fri. 7:30 to 5:00 EST (First Fri Off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, D. Lawrence Tarazano can be reached on (571) 272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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